AGRICULTURAL AND MECHANICAL
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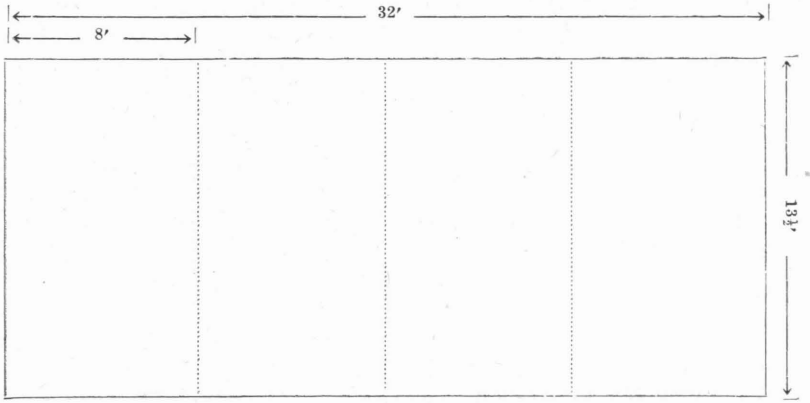
# *Grass Observation Nurseries*

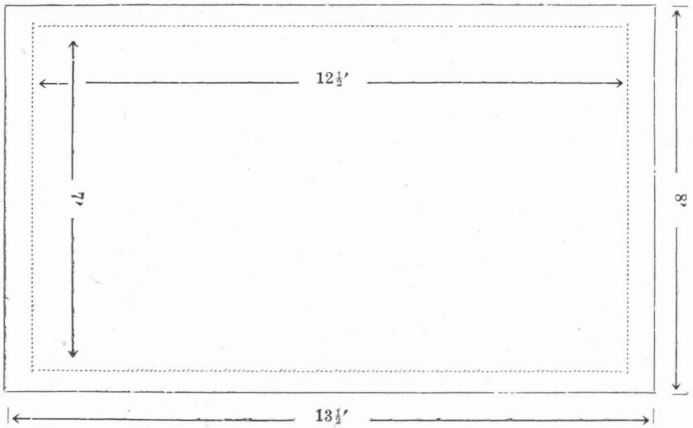
## *For Vocational Agriculture Teachers*

School of Agriculture
DEPARTMENT OF AGRICULTURAL EDUCATION
(In Cooperation with the State Board
for Vocational Education)
College Station, Texas

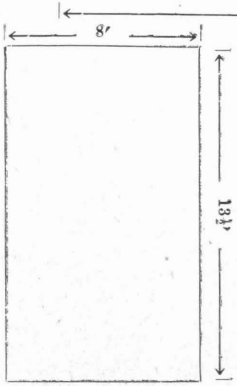
# GRASS OBSERVATION NURSERY PLOTS



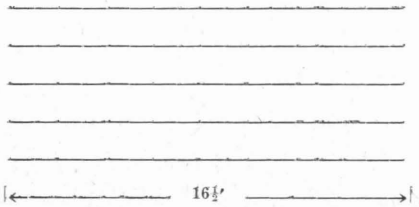

Plots of this type are suitable for observation of the effects of different applications of fertilizer. Each 13½′ x 32′ plot is seeded length-wise to some individual pasture plant or to some pasture mixture. Crosswise of each plot, various applications of fertilizer are made in 8′ x 13½′ strips. The net area of the entire plot is 1/100 acre; and of each crosswise strip, 1/400 acre.




Enlarged diagram of a cross strip from above plot, showing smaller area to be harvested where yields are to be determined, as explained on page 4. Dimensions of this smaller area are 7′ x 12½′, or 1/500 acre.




Smaller plots, 8′ x 13½′, or 1/400 acre, may be suitable where differences in applications of fertilizer are not to be observed.




Rod-length rows, rather than plots, may be preferable for some of the western or dryland grasses.

# *Grass Observation Nurseries*

In beginning pasture or range improvement programs, many vocational agriculture teachers find that farmers and stockmen in their communities are not well acquainted with the various pasture or range plants, particularly the more desirable ones. One means of helping them become more familiar with such plants is through the establishment of a grass observation nursery.

A grass observation nursery may consist of a number of small plots, in each of which is grown some individual type of pasture plant or some pasture mixture. Or in the case of range grasses, short rows may be preferable to plots. Such a nursery thus provides a convenient means for becoming better acquainted with desirable pasture or range plants, including their appearance, habits and seasons of growth, and their local adaptability. It may also serve to show some of the striking differences made by fertilizers; as, for example, the effect of phosphate upon the establishment and growth of clovers.

**Locating the nursery**

Locate the nursery in some prominent place along a highway or elsewhere convenient for work by the teacher and his Future Farmer chapter and for observation by farmers and ranchers.

Select land which has at least reasonable fertility and moisture-holding capacity, and which is representative of a type of soil common in the community. Choose ground on which no fertilizer has been used and which lies so that there will be as little washing as possible from one plot to another.

**Laying out the nursery**

For best appearance, the shape of the individual plots should be rectangular rather than square. This is also true for the crosswise strips into which the plots may be divided.

For convenience in figuring the amounts of seed and fertilizer, each plot and each strip should correspond to some known fraction of an acre.

Around the outside of the nursery should be an alley at least 3 feet wide. Separating all plots within the nursery should be alleys at least 2 feet wide. No alleys should be placed, however, between the crosswise strips within a plot.

**Establishing the plots**

Methods of establishing the different plots in the nursery will naturally vary, depending upon the kinds of pasture plants to be established, the type and condition of the soil, and the desires of the teacher and of farmers and ranchers consulted.

Further information on establishing nurseries containing the various kinds of plants indicated in this bulletin for different sections of the state may be secured in mimeographed form by writing to the Department of Agricultural Education, A. & M. College of Texas, College Station, Texas. If you have in mind some different or additional plots, the department will be glad to help you secure any information you may need.

**Marking and maintaining**

A simple marker should be provided for each plot to show the kind or kinds of plants growing. Markers should also be provided to show the kinds and rates per acre of fertilizer used.

Plots should ordinarily be clipped with a lawn mower to provide conditions as similar as possible to grazing. Clipping should not be done so often, however, that it will

prevent annual plants from reseeding. All clippings needed for reseeding should be left on plots. Weeds should be pulled by hand.

**Determining the yield**

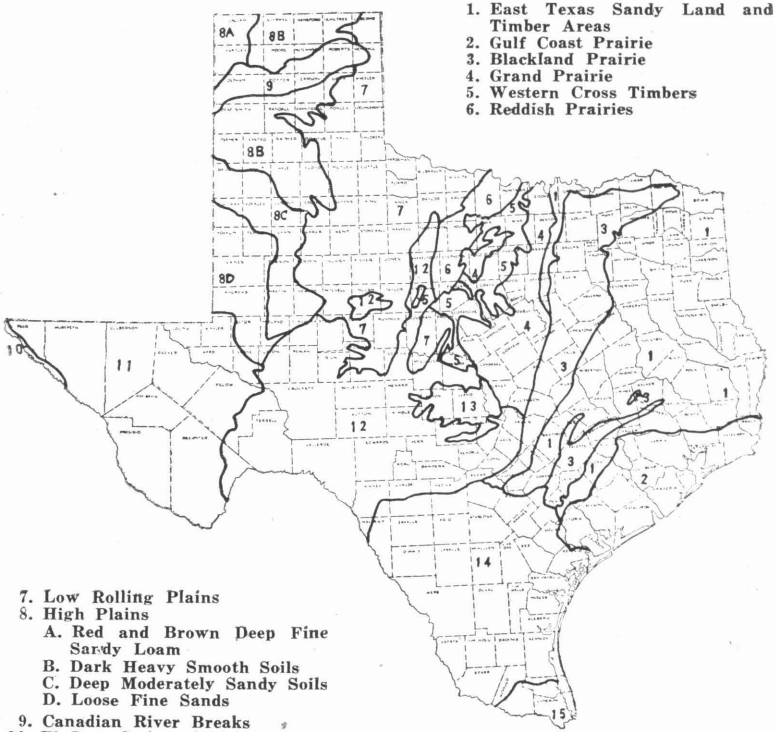
Some teachers may desire to determine the comparative yields from various plots or strips. This may be done by harvesting the clippings with a grass catcher attached to a lawn mower.

In harvesting, it will usually be found that the growth of plants around the edges of a strip is uneven and untypical of that on the strip as a whole. This uneven growth, sometimes called "border effect," may be eliminated by leaving unharvested a border 6 inches wide around the edges of the strip, as shown on page 2.

Immediately after cutting, the clippings should be weighed to obtain the green weight. The air-dry weight may be obtained by drying the clippings in the sun in open mesh bags until they reach a constant weight. All clippings, after weights have been obtained, should ordinarily be returned and spread on the plot from which they came.

For ease in converting yields to an acre basis, each strip (or the part of it from which clippings are harvested) should correspond to some known fraction of an acre.

## SOIL TYPE AREAS




1. East Texas Sandy Land and Timber Areas
2. Gulf Coast Prairie
3. Blackland Prairie
4. Grand Prairie
5. Western Cross Timbers
6. Reddish Prairies
7. Low Rolling Plains
8. High Plains
   - A. Red and Brown Deep Fine Sandy Loam
   - B. Dark Heavy Smooth Soils
   - C. Deep Moderately Sandy Soils
   - D. Loose Fine Sands
9. Canadian River Breaks
10. El Paso Irrigated Valley
11. Trans-Pecos
12. Edwards Plateau
13. Central Basin (Granitic Soils)
14. Rio Grande Plain
15. Lower Rio Grande Valley

## RECOMMENDED PLANTS BY SOIL AREAS*

(For numbered footnotes, see bottom of last page)

### 1. EAST TEXAS SANDY LAND AND TIMBER AREAS

**Improved pasture plants**
- Bermuda grass
- Dallis grass
- Carpet grass[17]
- Rescue grass[21]
- White Dutch clover
- Hop clover
- Persian clover
- Common lespedeza

### 2. GULF COAST PRAIRIE

**Improved pasture plants**
- Bermuda grass
- Dallis grass
- Carpet grass
- White Dutch clover
- Persian clover
- Bur clover
- Common lespedeza

### 3. BLACKLAND PRAIRIE

**Improved pasture plants**
- Bermuda grass
- Dallis grass
- Rescue grass
- Black medic[18]
- Bur clover

**Native and naturalized grasses**
- Buffalo grass
- Little bluestem
- Big bluestem
- Side-oats grama
- Slender grama[15]
- Canada wild-rye
- Colorado grass
- Switch grass
- Indian grass
- Texas bluegrass
- Vine mesquite[3]
- Bluestem wheatgrass[13]

**Promising introduced grasses**
- Yellow bluestem
- Angleton bluestem[12]
- Weeping lovegrass
- Italian ryegrass

### 4. GRAND PRAIRIE

**Native and naturalized grasses**
- Buffalo grass
- Curley mesquite grass[12]
- Little bluestem
- Big bluestem
- Side-oats grama
- Hairy grama
- Tall hairy grama[8]
- Slender grama[15]
- Canada wild-rye
- Rescue grass
- Hooded windmill grass[4]
- Colorado grass
- Switch grass[10]
- Indian grass
- Texas bluegrass
- Vine mesquite[3]
- Sand lovegrass[1]
- Bluestem wheatgrass[13]
- Sand dropseed[1 16]

**Promising introduced grasses**
- Yellow bluestem
- Weeping lovegrass

### 5. WESTERN CROSS TIMBERS

**Native and naturalized grasses**
- Buffalo grass
- Little bluestem
- Big bluestem
- Side-oats grama
- Hairy grama
- Tall hairy grama[8]
- Rescue grass
- Curley mesquite grass[12]
- Bermuda grass
- Canada wild-rye
- Hooded windmill grass[4 12]
- Bluestem wheatgrass[13]
- Sand dropseed[1 16]

**Promising introduced grasses**
- Yellow bluestem
- Weeping lovegrass

### 6. REDDISH PRAIRIES

**Native and naturalized grasses**
- Buffalo grass
- Curley mesquite grass[12]
- Blue grama
- Side-oats grama
- Hairy grama
- Tall hairy grama[8]
- Little bluestem
- Big bluestem
- Rescue grass
- Canada wild-rye
- Indian grass
- Colorado grass
- Switch grass[10]
- Texas bluegrass[14]
- Vine mesquite[3]
- Sand lovegrass[1]
- Bluestem wheatgrass[13]
- Sand dropseed[1 16]

**Promising introduced grasses**
- Yellow bluestem
- Weeping lovegrass

*Recommendations of the U. S. Soil Conservation Service. These recommendations are necessarily more or less general. More exact indications of adaptability and usefulness can be obtained only through local observation and trial.

7. LOW ROLLING PLAINS

**Native and naturalized grasses**
- Buffalo grass
- Curley mesquite grass[12]
- Blue grama
- Side-oats grama
- Hairy grama
- Tall hairy grama[8]
- Black grama[4 12]
- Little bluestem
- Tobosa grass
- Canada wild-rye
- Colorado grass
- Bluestem wheatgrass[13]
- Rescue grass
- Sand bluestem[1]
- Sand dropseed[1 16]
- Sand lovegrass[1]
- Red lovegrass[12]
- Switch grass[10]
- Vine mesquite[3]
- Texas bluegrass[14]
- Indian grass

**Promising introduced grasses**
- Yellow bluestem
- Weeping lovegrass

8. HIGH PLAINS

A. Red and Brown Deep Fine Sandy Loam

**Native and naturalized grasses**
- Buffalo grass
- Blue grama
- Side-oats grama
- Little bluestem[2]
- Canada wild-rye
- Galleta grass
- Sand bluestem[1]
- Sand dropseed[1 16]
- Bluestem wheatgrass

**Promising introduced grasses**
- Yellow bluestem
- Smooth brome

B. Dark Heavy Smooth Soils

**Native and naturalized grasses**
- Buffalo grass
- Blue grama
- Side-oats grama
- Little bluestem[2]
- Canada wild-rye
- Galleta grass
- Sand bluestem[1]
- Sand dropseed[1 16]
- Vine mesquite[3]

**Promising introduced grasses**
- Yellow bluestem
- Smooth brome

C. Deep Moderately Sandy Soils

**Native and naturalized grasses**
- Buffalo grass
- Blue grama
- Side-oats grama
- Little bluestem[2]
- Tobosa grass
- Red lovegrass
- Sand bluestem[1]
- Sand dropseed[1 16]
- Black grama[4]
- Vine mesquite[3]

**Promising introduced grasses**
- Yellow bluestem
- Lehmann lovegrass

D. Loose Fine Sands

**Native and naturalized grasses**
- Buffalo grass
- Blue grama
- Side-oats grama
- Little bluestem[2]
- Tobosa grass
- Red lovegrass
- Black grama[4]
- Hooded windmill grass[1]
- Sand dropseed[1 16]
- Vine mesquite[3]

**Promising introduced grasses**
- Lehmann lovegrass

9. CANADIAN RIVER BREAKS

**Native and naturalized grasses**
- Buffalo grass
- Blue grama
- Side-oats grama
- Little bluestem
- Canada wild-rye
- Bluestem wheatgrass
- Hairy grama
- Black grama[4]
- Sand bluestem[1]
- Sand lovegrass[1]
- Sand dropseed[1 16]

**Promising introduced grasses**
- Lehmann lovegrass

10. EL PASO IRRIGATED VALLEY

**Native and naturalized grasses**
- Curley mesquite grass
- Buffalo grass
- Blue grama
- Side-oats grama
- Slender grama
- Alkali sacaton
- Sand dropseed[1 16]

**Promising introduced grasses**
- Boer grass
- Lehmann lovegrass
- Blue panicum

11. TRANS-PECOS

**Native and naturalized grasses**
- Curley mesquite grass

Hairy grama
Rothrock grama
Slender grama
Side-oats grama[5]
Blue grama[5]
Alkali sacaton
Buffalo grass[6]
Vine mesquite[3]
Sand dropseed[1 16]

**Promising introduced grasses**
Lehmann lovegrass

12. EDWARDS PLATEAU

**Native and naturalized grasses**
Curley mesquite grass
Buffalo grass
Blue grama
Hairy grama
Side-oats grama
Slender grama
Hooded windmill grass
Canada wild-rye
Indian grass
Little bluestem[7]
Tall hairy grama[8]
Tobosa grass[9]
Rescue grass
Colorado grass
Switch grass[10]
Vine mesquite[3]
Black grama
Sand dropseed[1 16]

**Promising introduced grasses**
Yellow bluestem
Boer lovegrass
Weeping lovegrass
Lehmann lovegrass
Blue panicum

13. CENTRAL BASIN (GRANITIC SOILS)

**Native and naturalized grasses**
Curley mesquite grass
Side-oats grama
Slender grama
Red lovegrass
Colorado grass
Vine mesquite[3]
Texas bluegrass
Sand dropseed[1 16]

**Promising introduced grasses**
Yellow bluestem
Boer lovegrass
Blue panicum

14. RIO GRANDE PLAIN

**Native and naturalized grasses**
Curley mesquite grass
Buffalo grass
Side-oats grama
Hairy grama
Slender grama
Rescue grass
Little bluestem[7]
Seacoast bluestem[11]
Red lovegrass
Switch grass
Indian grass
Hooded windmill grass[1]
Vine mesquite[3]
Sand dropseed[1 16]

**Promising introduced grasses**
Yellow bluestem
Rhodes grass
Boer lovegrass
Weeping lovegrass
Lehmann lovegrass
Blue panicum

15. LOWER RIO GRANDE VALLEY

**Native and naturalized grasses**
Buffalo grass
Side-oats grama
Hairy grama
Slender grama
Red lovegrass
Hooded windmill grass[1]
Seacoast bluestem[11]
Sand dropseed[1 16]

**Promising introduced grasses**
Yellow bluestem
Angleton bluestem
Rhodes grass
Boer lovegrass
Weeping lovegrass
Blue panicum

## BOTANICAL NAMES OF RECOMMENDED PLANTS

(This is a combined list of plants from all areas, with their botanical names, which may be needed for the positive identification of plants bearing different common names in different localities).

**Improved pasture grasses**

Bermuda grass, Cynodon dactylon
Carpet grass, Axonopus affinis (old name compressus)
Dallis grass, Paspalum dilatatum

**Improved pasture legumes**

Black medic, Medicago lupulina
Bur clovers, Medicago arabica and M. hispida
Common lespedeza, Lespedeza striata

Hop clovers, Trifolium procumbens and T. dubium
Persian clover, Trifolium resupinatum
White Dutch clover, Trifolium repens

**Native and naturalized range grasses**

Alkali sacaton, Sporobolus airoides (Tussock grass)
Big bluestem, Andropogon furcatus
Black grama, Bouteloua eroipoda
Blue grama, Bouteloua gracilis
Bluestem wheatgrass, Agropyron smithii
Buffalo grass, Buchloe dactyloides
Canada wild-rye, Elymus canadensis
Colorado grass, Panicum texanum (also known as Concho grass, Texas millet, and Texas panicum)
Curley mesquite grass, Hilaria belangeri
Galleta grass, Hilaria jamesii
Hairy grama, Bouteloua hirsuta
Hooded windmill grass, Chloris cucullata
Indian grass, Sorghastrum nutans
Little bluestem, Andropogon scoparius
Red lovegrass, Eragrostis secundiflora
Rescue grass, Bromus catharticus
Rothrock grama, Bouteloua rothrocki
Sand bluestem, Andropogon hallii
Sand dropseed, Sporobolus cryptandrus
Sand lovegrass, Eragrostis trichodes
Seacoast bluestem, Andropogon littoralis
Side-oats grama, Bouteloua curtipendula
Slender grama, Bouteloua filiformis
Switch grass, Panicum virgatum
Tall hairy grama, Bouteloua hirsuta pectinata
Texas bluegrass, Poa arachnifera
Tobosa grass, Hilaria mutica
Vine mesquite, Panicum obtusum

**Promising introduced grasses**

Angleton bluestem, Andropogon annularis
Blue panicum, Panicum antidolate
Boer lovegrass, Eragrostis chloromelas
Lehmann lovegrass, Eragrostis lehmanniana
Italian ryegrass, Lolium multiflorum
Rhodes grass, Chloris gayana
Weeping lovegrass, Eragrostis curvula
Yellow bluestem, Andropogon ischaemum

[1]On sandy soils.
[2]Except on hard lands
[3]On sandy or gravelly soils, mostly along water courses
[4]On gravelly soils
[5]On parts of area having higher rainfall
[6]On the intermountain flats of eastern part of area
[7]Except western third of area
[8]On shallow soil or parent material of limestone hills
[9]On western two-thirds of area
[10]In swales and along streams
[11]On sandy soils of eastern half of area
[12]On lower half of area
[13]On northern part of area
[14]On sandy loams and shinnery ranges
[15]On southeastern part of area
[16]Useful for revegetating critical abandoned land. Usually seeded in a mixture of better quality grasses.
[17]On moist soils of east half of area
[18]Needs more trial
[19]Except where rainfall is less than 15 inches
[20]In drier areas, only in overflow spots or locations receiving extra water
[21]Mostly on more fertile soils in western part of area